Chapter 1 - Introduction and Background

The Strategic Highway Corridors (SHC) concept represents the first major implementation step to be advanced under the update of North Carolina's Long-Range Multimodal Statewide Transportation Plan (Statewide Transportation Plan). The Statewide Transportation Plan, adopted by the Board of Transportation (BOT) in September 2004, is the product of an intensive, three-year planning process to greatly enhance a focus on providing and supporting a truly modern, well-maintained, and multimodal transportation system. In keeping with the Plan's emphasis to increase modernization and preservation activities across all of North Carolina's travel modes, the SHC concept generates a new focus for the North Carolina Department of Transportation (NCDOT) to improve, protect, and better plan for a series of critical highway facilities in the state. This concept provides a tangible, first step for maximizing the use of highway infrastructure and limited financial resources. The formal recognition of the SHC concept confirms NCDOT's commitment to emphasize greater planning and investment in the state's highest use facilities - those facilities that play a critical role in statewide mobility and regional connectivity.

> "Today's economy is a highly competitive global marketplace. The development of *Strategic Highway Corridors* is an exciting new initiative that will expand our competitiveness by creating safer and easier access to job centers, airports, hospitals, military bases and schools. Public input will ensure that we improve these corridors in a way that promotes economic prosperity and, at the same time, protects our state's valuable natural resources."
>
> -Governor Michael F. Easley

This report provides information about the development of the SHC concept, including background, goals, corridor selection, the vision for the corridors, mapping, implementation, and public involvement. Input from staff, other state agencies, and the public resulted in enhancements and revisions to the original concept over the past three years. Additionally, a series of nine public forums held throughout North Carolina in late 2003/early 2004 confirmed broad support, timeliness, and necessity for this concept. The active involvement of BOT members has also been instrumental in guiding staff to create a department policy on the concept. Plan implementation rests largely with the staff of the NCDOT, partnering agencies, and local governments. For each of the Strategic Highway Corridors, continuous and active involvement over time is required to affect long-term decisions.

1.1 What is the State of Transportation in North Carolina?

NCDOT manages one of the largest roadway systems in the United States, second only to Texas. This level of responsibility combined with continued growth in vehicle ownership and vehicle miles traveled (VMT), places a significant daily demand on North Carolina's highway infrastructure. The condition of the existing system is stressed, while much of the improvement program is oriented towards new highway construction. The highway analysis in the Statewide Transportation Plan identified a growing list of backlog and anticipated needs within the existing system, including:

- Nearly 32,000 of the 78,844 miles (41%) of state-maintained highways in North Carolina currently have significant pavement condition deficiencies
- Almost 7,000 of the state's 17,000 bridges (41%) are currently deemed "deficient", i.e., considered in either poor condition and/or lacking adequate load carrying capacity

- Future highway maintenance/preservation needs (over the next 25 years) are expected to be almost $25 billion
- Future highway modernization needs (over the next 25 years) are expected to be almost $20 billion

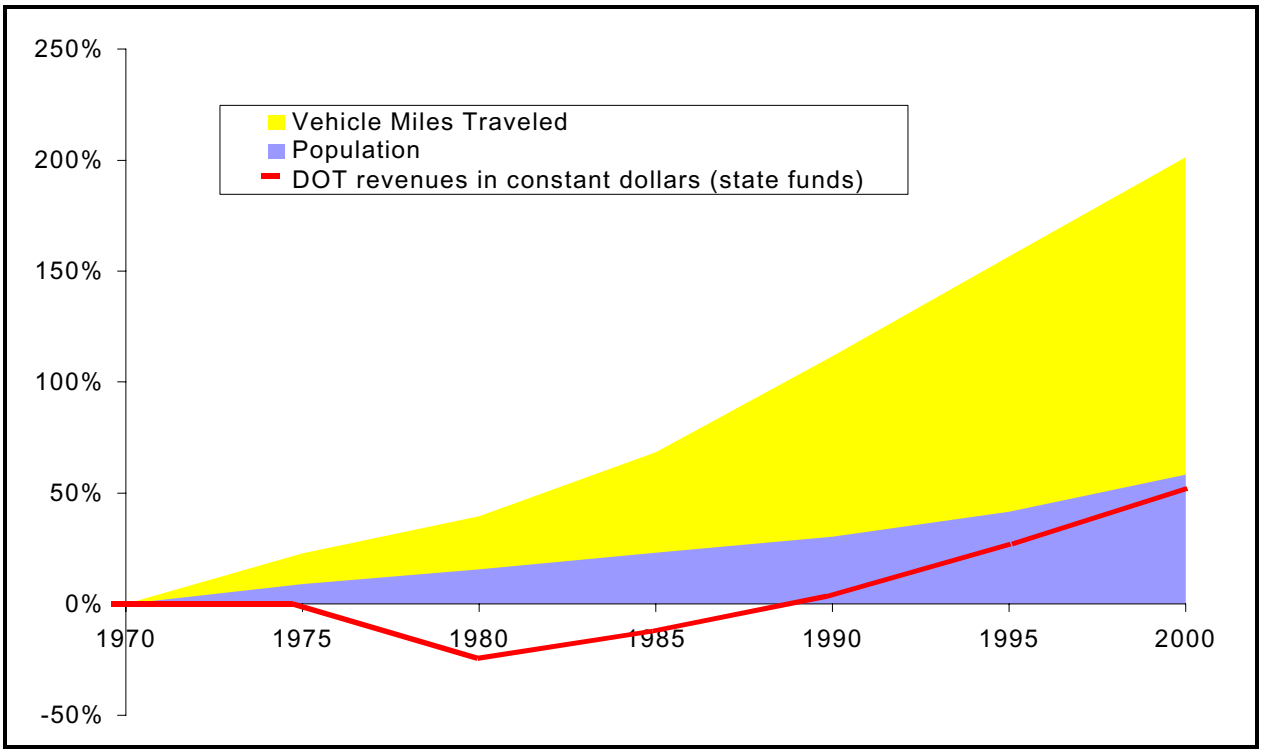
Further delay in addressing these needs will result in more costly reconstruction projects in the future and adversely impact safety to the traveling public. According to The Road Information Program (TRIP), declining safety features and poor pavement conditions are costing North Carolina motorists $5.3 billion annually in the form of traffic accidents, additional vehicle operating costs, and delays[1]. TRIP also reports North Carolina's traffic fatality rate to be 13 percent higher than the national average, in part due to increasing congestion, but also due to deteriorating design and physical roadway conditions such as poorly maintained medians, lack of adequate shoulders, and antiquated intersections and traffic signal systems[2]. Declining safety features along with unchecked development in and around key corridors in the state continue to highlight the need for broad operational improvements and greater coordination of planning between state and local entities.

Delivering transportation service is also becoming more complex and challenging, both nationally and in North Carolina. Past legislation, historical roles and responsibilities, and environmental, land-use, and social equity concerns govern the life of a highway project as it moves from planning to construction. Implementation of recent environmental streamlining efforts by the NCDOT, the United States Army Corps of Engineers, and the North Carolina Department of Environment and Natural Resources (NCDENR) may result in a 20% reduction in overall delivery time. However, many high-profile, new highway construction projects face a greater share of environmental hurdles and public opposition requiring additional time and a concentration of resources. Legislative mandates require NCDOT to stay focused on expanding the system; however, flexibility is needed to make proactive, strategic improvements in light of an aging highway system and plan policy direction.

The financial resources needed to keep pace with North Carolina's list of infrastructure needs falls far short of what is required and the gap will only widen in the future. Recent trends suggest VMT to be growing at a rate seven times faster than that of NCDOT's budget and almost three and a half times the rate of population (see Exhibit 1). With no new significant funding sources identified in the near term, NCDOT must act to improve and obtain greater efficiency out of critical highway assets. The SHC concept addresses this challenge by focusing NCDOT on a series of highways intended to promote economic competitiveness, environmental sustainability, and improved travel continuity between regions and communities.

[1]The Road Information Program, *Paying the Price for Inadequate Roads in North Carolina: The Cost to Motorists in Reduced Safety, Lost Time, and Increased Vehicle Wear*, April 2004.
[2]Traffic fatality rate based on TRIIP analysis of National Highway Traffic Safety Administration data comparing North Carolina's traffic fatality rate per 100 million vehicle miles of travel (1.7) to the national average (1.5).

Exhibit 1: Vehicle Miles Traveled, Population, and NCDOT's Budget (1970-2000)



1.2 How is North Carolina Changing?

Demographic Trends

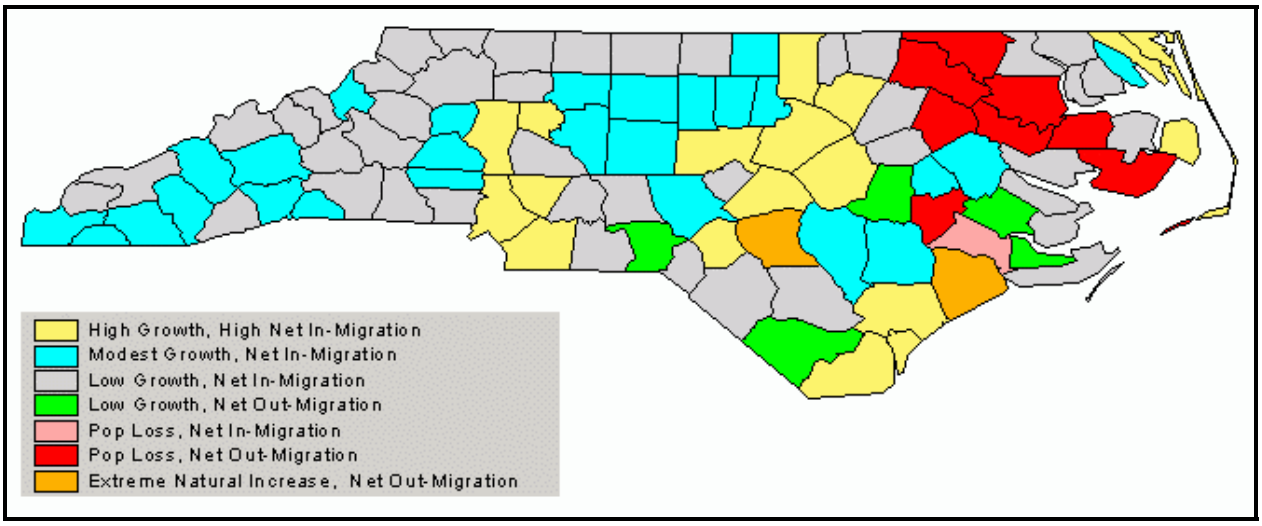
North Carolina is experiencing rapid growth and is currently the third-fastest growing state east of the Mississippi River, according to the United States Census Bureau. North Carolina's population, at just over 6 million people in 1990, is now almost 8.5 million[3]. The fastest growing counties are currently in the Charlotte, Raleigh-Durham, and Wilmington areas (see Exhibit 2). This rate of population expansion is expected to continue in the future resulting in an additional 3.6 million new residents by 2030 (see Exhibit 3).

Population alone is creating significant new transportation capacity demands for North Carolina, but other demographic trends are also adding to the state's transportation challenges:

- Household income in the state has risen dramatically, further fueling recreational and tourism travel, and adding to overall vehicle trips per household.
- Suburbanization is increasing - the typical North Carolina commuter spends an additional 35 hours per year in traffic versus 10 years ago.[1]
- VMT, a common industry measure of travel demand, has increased by almost 40% from 1990 to 2000.

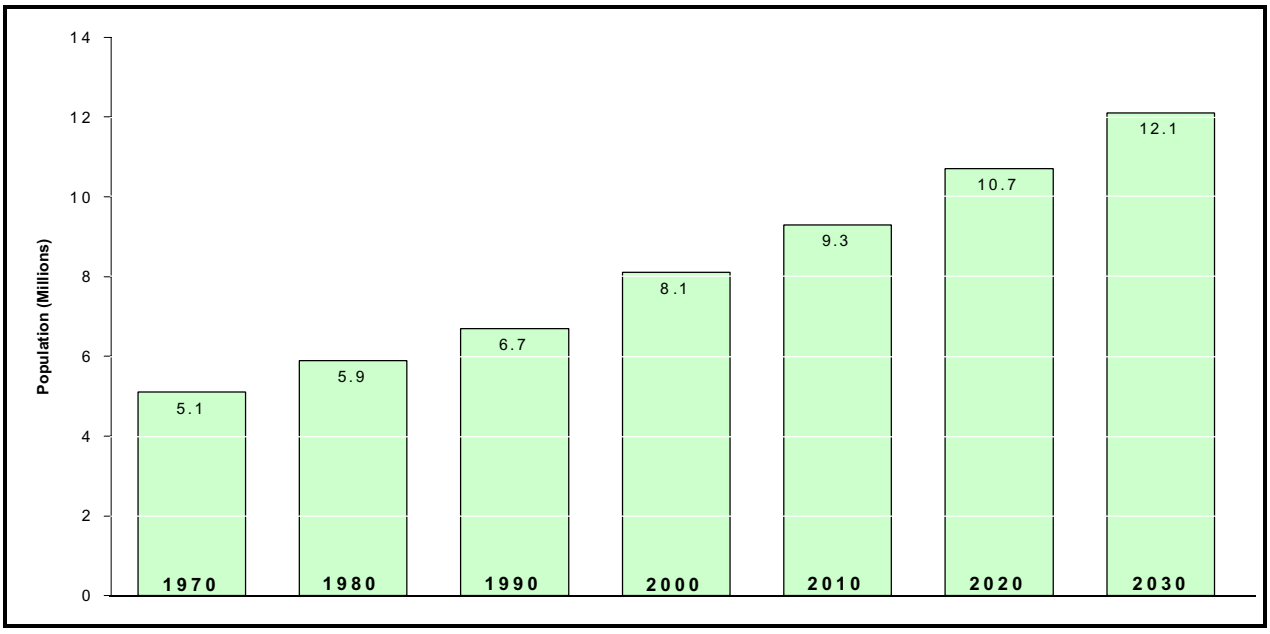
[3]North Carolina State Data Center, http://sdc.state.nc.us/.

Exhibit 2: Projected Population Growth by County (2000-2010)



Source: *North Carolina State Data Center*

Exhibit 3: Existing and Projected Population Growth (1970-2030)



Source: *North Carolina State Data Center*

Economic Trends

North Carolina is characterized by diverse regional economies, supported by both traditional and emerging industries. The Charlotte area is a prominent banking and financial center; the Southeast region is tied to the United States military presence; the Mountains, Northeast region and the Outer Banks drive a burgeoning tourism economy; the Triad is home to numerous manufacturing and logistics industries; and the Research Triangle region is touted for its technology-related businesses and prominent university pres-

ence. North Carolina is also well known for its many agri-business industries, and the state is a national leader in turkey and pork production. Accurately predicting the future of North Carolina's economy is difficult; however the growth of a number of service-oriented and knowledge-based companies is expected to change the nature of workforce training, job skills, and industry recruitment and placement. Other trends such as manufacturing decentralization, just-in-time delivery[4], and the increased use of technology will require transportation services to be modern, reliable, and operationally efficient. The SHC concept supports these trends by focusing resources on better planning of major statewide and regionally significant facilities. These facilities will serve as a transportation backbone for the state, tying regions and subregions together, expeditiously moving raw goods to market, and keeping North Carolina at a competitive advantage both domestically and internationally.

Domestic and International Trade

Transportation is increasingly becoming the core component of a broader, global economic supply chain. Recent national and global economic policies, such as the North American Free Trade Agreement (NAFTA) and other trade liberalization practices, along with alliances in new international markets will add significant pressure to North Carolina's transportation system. The state's gateways, air and sea ports, connecting infrastructure, and major rail and highway facilities will bear the bulk of this increased freight movement. Between 1998 and 2020 domestic tonnage carried along national freight systems is expected to increase by 67% (see Exhibits 4 and 5), while international trade will nearly double. This dramatic increase in commodity flow, coupled with delivery time and service reliability considerations will require state DOTs to build and maintain an integrated transportation system with seamless operations between manufacturing centers, distribution hubs, and major freight destinations.

[4] A method of production and inventory cost control based on the delivery of parts and supplies at the precise time they are needed in a production process.

Exhibit 4: 1998 Domestic Truck Volumes

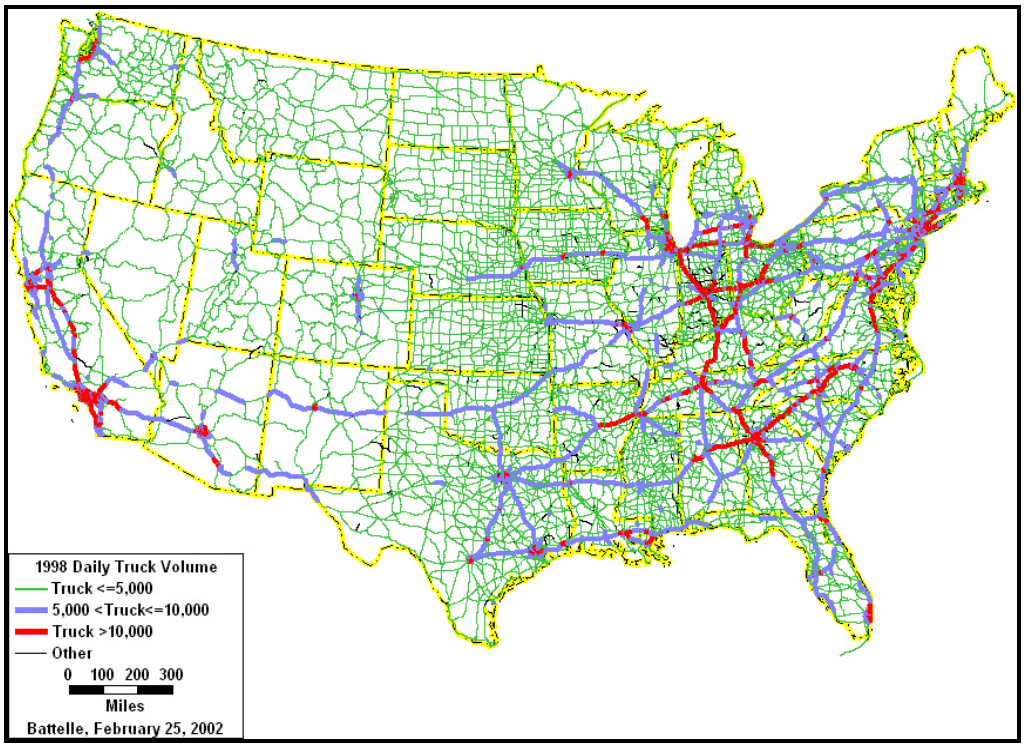
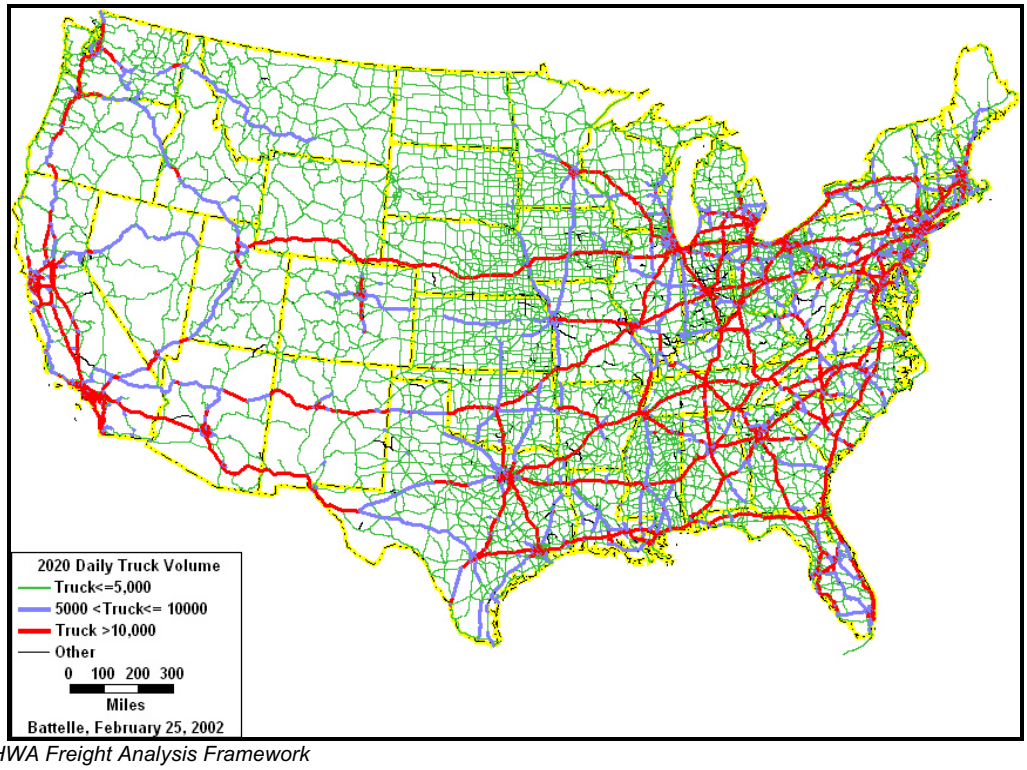


Exhibit 5: 2020 Forecasted Domestic Truck Volumes



Source: *FHWA Freight Analysis Framework*

Latin American Trade and Transportation Study

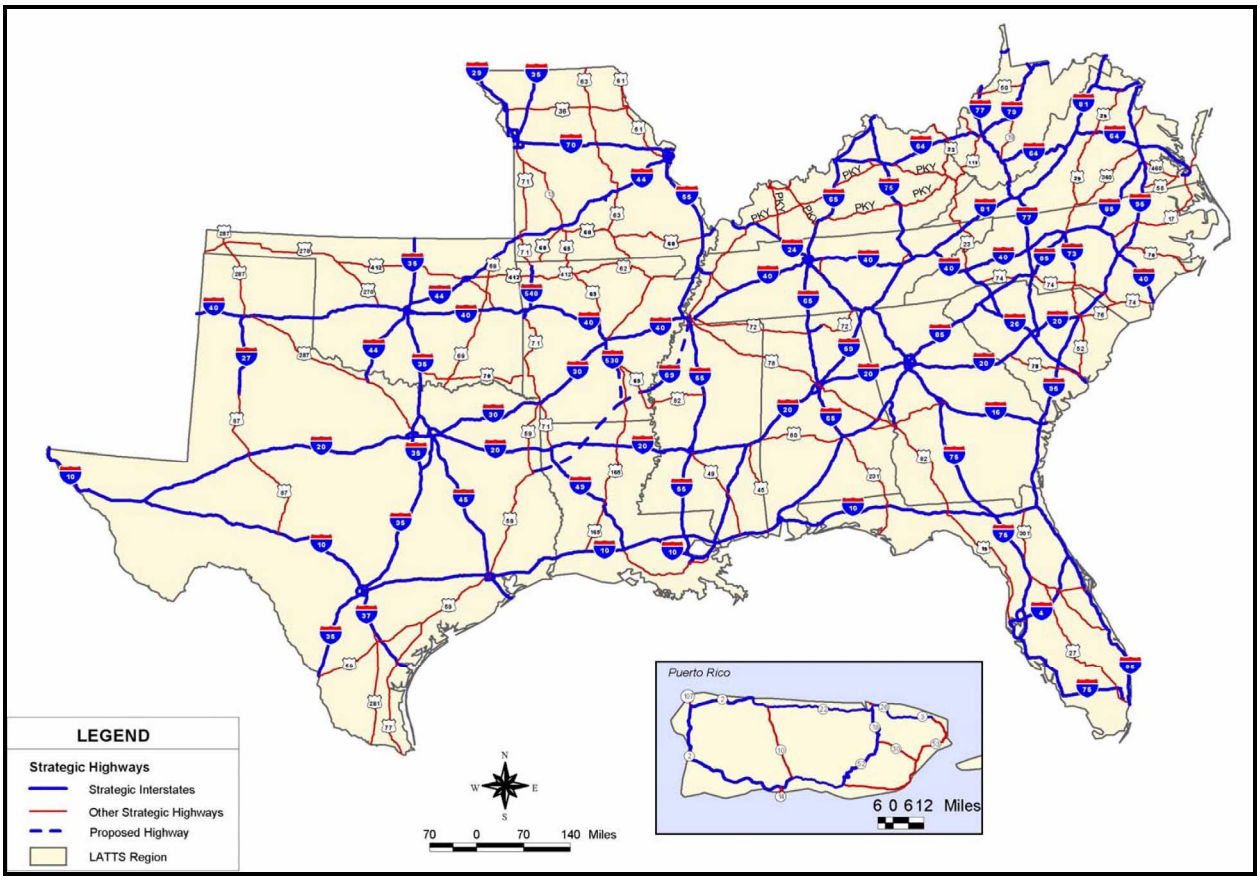
Since the late 1990's, NCDOT along with 15 other state DOTs in the southeastern United States, have sought to better understand the impact of international trade with Latin America. The Latin American Trade and Transportation Study[5] (LATTS) financed by each state DOT and the Federal Highway Administration (FHWA) provides decision-makers with data and an outlook of infrastructure needs based on a projected three-fold increase in trade with Latin American countries by 2020. The study also raises investment policy and economic considerations faced by each southeastern state. The state DOTs, formally recognized as the Southeastern Transportation Alliance, have utilized the services of a consultant firm to produce a series of state profile reports, trade flow summaries, and financial strategies associated with reorienting infrastructure investment to take advantage of this trading opportunity. Needs and costs associated with highways, rail lines, airports, and sea/river ports, along with other relevant freight trends have been prepared for each state. Recently a new Institute for Trade & Transportation Studies (ITTS) opened in Louisiana and will act as a resource and research arm to contributing member states.

Given this context, the SHC concept again proves to be a timely platform on which specific infrastructure improvements required to accommodate increased freight movement can occur. Each LATTS Highway Corridor (see Exhibit 6) in North Carolina is already identified as a Strategic Highway Corridor, and the ultimate facility type vision for these specific corridors (see Chapter 3) addresses the theme of greater freight mobility and safety. Along with advancing the SHC concept, NCDOT must consider the following actions as part of an overall freight transportation policy:

- Building efficient, mobility-oriented transportation corridors that service truck and rail freight needs and effectively move traditional manufacturing and emerging goods to market.
- Modernizing short highway connections (typically National Highway System Connectors) in urban and rural areas that represent critical "last mile" segments of the transportation system.
- Partnering with the private industry (and other state agencies such as the Department of Commerce) to finance transportation solutions for unique regional infrastructure problems.
- Providing transportation services that fit emerging supply chain and business needs; consider creative solutions such as truck-only lanes for specific highway segments.
- Working with other vested industries and organizations to improve the efficiency and transfer of goods between transportation modes at intermodal terminals, ports, and distribution hubs.

[5]Additional information can be found at http://www.wilbursmith.com/latts/index.html.

Exhibit 6: Latin America Trade and Transportation Study Highway Network



Source: *Latin America Trade and Transportation Study*

1.3 How is North Carolina Addressing the Environment?

In recent years, environmental considerations associated with transportation projects have been incorporated earlier in the overall planning process. NCDOT staff is conducting more environmental prescreening analyses in the systems-level planning process and working to improve the Purpose and Need statements that represent the first phase of project development. Section 102 of the National Environmental Policy Act (NEPA) requires the completion of an Environmental Impact Statement (EIS) for projects that have a significant impact on the environment. The EIS includes impacts on wetlands, wildlife, water quality, historic properties, and public lands. In many cases, new location highway projects pose the greatest challenge for meeting NEPA requirements due to the obvious impacts created in undeveloped areas. Environmental complications and project complexities have overwhelmed resources and put state and federal agencies at odds with one another over how to best balance project delivery versus protecting endangered species or sensitive ecological areas. NCDOT has established itself as a national leader in this field by working to build consensus among parties and identifying mutual goals that lead to a streamlined process. These efforts have resulted in the creation of an Office of Environmental Quality and application of a highly recognized Environmental Stewardship Policy (Appendix A).

NCDOT and its partners are also working towards achieving nine streamlining goals[6] which are intended to reduce time in the project planning and delivery process while maintaining a commitment to environmental excellence. The SHC concept fits the tone of these efforts by promoting resources to maximize the use of existing highway infrastructure and improve operational movement within existing highway corridors. A study of similar, long-distance corridor planning at Oregon Department of Transportation[7] revealed a series of direct environmental benefits, which *could* be replicated in North Carolina. The list includes:

- **Resolution of Major Planning Issues Prior to the Initiation of Project Development.** Consensus among local, regional, state, and federal agencies regarding a long-term planning vision and purpose is essential to successful project development. Corridor planning provides a framework within which a vision for individual corridors in communities can be reviewed, prioritized, and advanced under a consensus.

- **Preservation of Transportation Rights-of-Way.** Costs for transportation rights-of-way increase substantially as land suitable for transportation is developed for other purposes. Uncertainty about right-of-way needs may also impact property owners, businesses, and in some cases entire communities. The scope and 25-year horizon of a corridor plan can identify long-range right-of-way needs which serve to direct future development, reducing development costs and specifically environmental, social, and economic impacts.

- **Protection of Transportation Investments.** To prevent premature obsolescence of highways and other facilities, corridor planning examines alternate means to accommodate transportation needs with and without capital-investment improvements. Alternatives such as access management, utilization of parallel local streets, reconfigured land use patterns, and demand management programs (i.e., telecommuting, rideshare, public transportation, flex-time, etc.) are considered in lieu of or in addition to major capital improvements. All of these result in limited impacts to the surrounding environment, and can provide other community enhancement and quality of life benefits.

- **Partnership with Diverse Public and Private Agencies and Organizations.** Corridor planning provides a forum for resolution of policy issues and negotiation of strategic partnerships between organizations striving to fulfill complimentary missions with limited resources. New innovative public-private partnerships, cost sharing agreements, and confidence-building measures can be enacted to bring multiple parties around a common goal.

Along with the benefits outlined above, NCDOT should also consider other innovative solutions for leveraging the use of corridor planning. One example might include moving towards an incentive-based "flexible mitigation" policy along Strategic Highway Corridors. All agencies involved would agree up front to identify and improve the "green" infrastructure (greenways or nature trails) along with and in response to the unavoidable impacts created by improving the "grey" infrastructure, i.e., the actual physical highway and cross streets. This type of planning would be particularly effective along designated scenic highway corridors.

Efforts should also be made to maintain the natural beauty of an area when making transportation improvements. The Baltimore-Washington Parkway in Maryland provides a good example of preserving

[6] *NCDOT/FHWA Joint Work Plan for Timely Program Delivery with Environmental Excellence*, http://www.ncdot.org/secretary/envsteward/performance/workplan/.
[7] http://www.odot.state.or.us/tdb/planning/corridor/overview.html.

the scenic character of an area while providing high-speed mobility for commuters and tourists (see Exhibit 7). Working together with local stakeholders, NCDOT should seek context sensitive solutions that not only enhance the transportation function of the roadway, but also the surrounding area.

Exhibit 7: Baltimore-Washington Parkway